

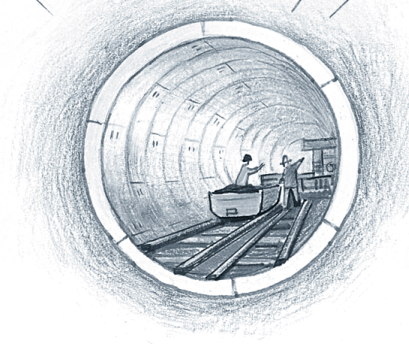
# DENNY WAY

# LAKE UNION

## CSO Control Project

Issue No. 6,  
April 2001

*This King County project will control CSOs to Lake Union and Elliott Bay, improving water quality and reducing the potential for adverse effects on human health and the environment.*



A tunnel boring machine similar to the one pictured above will be used to mine the 6,200 foot Mercer Street Tunnel. (See article on page 2.)

## Construction Moves Ahead

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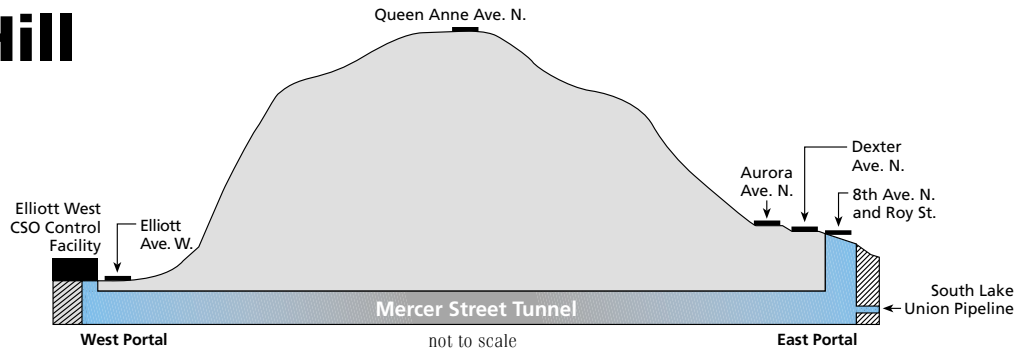
Construction for the Denny Way/Lake Union CSO Control Project has been underway since June 2000. The site of the future CSO Control Facility at 545 Elliott Avenue West has been the focus of the activity but changes are coming in the next few months as tunneling begins for the Mercer Street Tunnel and work starts on the outfall in Myrtle Edwards Park.

The Denny Way Project is a joint effort between King County Department of Natural Resources and the City of Seattle (Seattle Public Utilities) to control combined sewer overflows (CSOs) into Lake Union and Elliott Bay. CSOs are discharges of combined sanitary sewage and stormwater that are released into water bodies during storms. Five construction contracts are needed to implement the project, and construction will take place over a four-year period. Construction activities will occur in three areas of the city – 545 Elliott Avenue West, Myrtle Edwards and Elliott Bay Parks on the waterfront, and South Lake Union.



# The Mercer Tunnel Heads Under Queen Anne Hill

*This project will reduce the discharge of combined wastewater and storm water to Lake Union and Elliott Bay.*



Construction of the 6,200-foot long, Mercer Street Tunnel is scheduled to begin in May 2001 when the tunnel boring machine (TBM) is lowered into the shaft of the west tunnel portal and begins its journey eastward, under Mercer Street. Approximately eight months later it will see the light of day once again when it emerges at the east tunnel portal at 8th Avenue North and Roy Street in the South Lake Union area. The tunnel grade will be relatively flat; the depth from the surface to the tunnel will vary as Queen Anne Hill rises above it.

When the project is completed, flows will be stored in the 14' 8" diameter tunnel during storms. The tunnel will store up to 7.2 million

gallons of CSO flows.

**The west tunnel portal**, measuring about 70 feet by 150 feet by 50 feet deep, is located at 545 Elliott Avenue West. During tunnel construction, this site is where spoils are removed from the tunnel and tunnel lining sections are sent in.

Construction of the **east tunnel portal** began in February 2001. Following removal of the TBM in early 2002, the portal will be used for construction of two more tunnels and one pipeline that will connect to the existing collection system. Eventually, the portal structure will serve as the collection point for all flows diverted to the tunnel from the South Lake Union area.

## A Look at the Tunnel Boring Machine

Construction of a tunnel must be planned to address the needs of the ground that the tunnel will go through. Some

tunnels go through rock, which requires certain equipment. Other tunnels, such as most of the tunnels in Seattle, go through "soft ground" and need to be planned accordingly. Most of the recent tunnels in Seattle have used tunnel boring machines (TBMs) which are similar in many ways to the one that will be used on the Mercer Street Tunnel.



*The two photos show the cutting head and the control-room on board the 16.6-foot diameter EPB tunnel boring machine that will excavate the 6,200 foot long Mercer Street Tunnel.*

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# What? When? and Where?

*Construction began on the Mercer Street Tunnel contract in June 2000. Listed below is King County's schedule for all contracts in the project.*

Contract	Affected Area	Construction Starts	Construction Complete
Mercer Street Tunnel	<ul style="list-style-type: none"> <li>• 545 Elliott Avenue West</li> <li>• Elliott Bay Park</li> <li>• 8th Avenue North and Roy Street</li> </ul>	Summer 2000	Summer 2002
Marine Outfalls	<ul style="list-style-type: none"> <li>• Myrtle Edwards Park</li> </ul>	Spring 2001	Spring 2002
Elliott West Pipelines	<ul style="list-style-type: none"> <li>• Myrtle Edwards Park</li> <li>• Elliott Bay Park</li> </ul>	Fall 2001	Summer 2004
South Lake Union Pipelines	<ul style="list-style-type: none"> <li>• Valley Street from Fairview Avenue North to Westlake Avenue North</li> <li>• Under Broad and Roy Streets between the Westlake/Valley intersection and Dexter Avenue North</li> <li>• 8th Avenue North between Republican and Roy Streets</li> <li>• Roy Street between 8th Avenue North and Dexter Avenue North</li> </ul>	Winter 2002	Summer 2003
Elliott West CSO Facility	<ul style="list-style-type: none"> <li>• 545 Elliott Avenue West</li> </ul>	Winter 2002	Summer 2004

## We Want to be a Good Neighbor

King County is working with its construction contractors to minimize the construction impacts to the community. In addition to local, state, and federal ordinances and requirements, special requirements have been written into the construction contracts addressing such issues as noise, traffic, and dust. King County will monitor compliance! To report construction complaints, call the hotline at 206/205-1460.



# What you will see in the next six months in...

## 1 ... South Lake Union

Construction activities for the east portal of the Mercer Street Tunnel began this February at the intersection of 8th Avenue North, Roy Street, and “upper” Broad Street. The portal is the east terminus of the Mercer Street Tunnel and will be used to retrieve the tunnel boring machine (TBM) once tunneling is completed.

### *What it means...*

Roy Street will be closed to traffic between 8th Avenue North and Dexter Avenue North until early summer 2001. Detours will direct west-bound traffic to an alternate route to Dexter Avenue North. In addition, there will be barricades, traffic-control devices, and loss of on-street parking on Roy Street. Bus stops will be accessible and access to businesses will remain open.

Roy Street will be reopened to one lane of traffic between the time construction is completed on the east portal (early summer 2001) and when the TBM arrives in early 2002.

Eventually, an additional pipe will be installed and connections made under Roy Street between 8th Avenue North and Dexter. Work is expected to begin on that portion of the project in spring 2002.

## 2 ... Myrtle Edwards and Elliott Bay Parks

Two upcoming construction contracts will create impacts in the waterfront parks beyond those already in place.

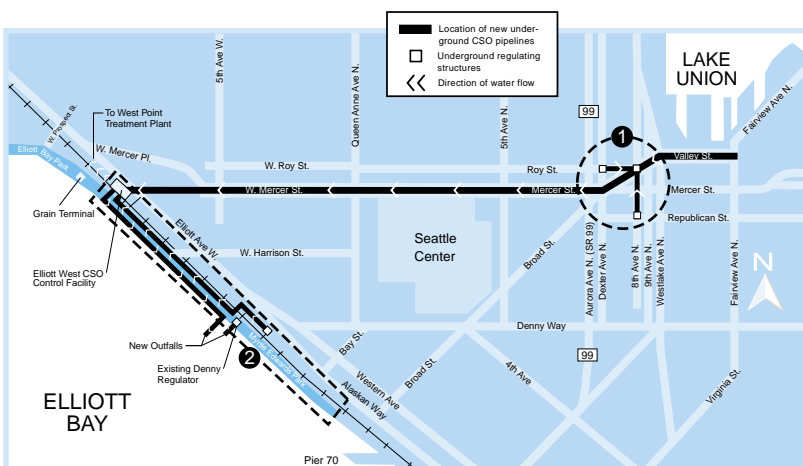
**The Marine Outfalls Contract:** Construction of a new outfall, an outfall extension, and an on-shore transition structure will begin in spring 2001 at the site of the existing Denny Regulator building in Myrtle Edwards Park. The Elliott West outfall will terminate about 500 feet offshore and will be 60 feet deep. It will discharge treated CSO flows during heavy storms. The Denny Way CSO outfall extension will terminate about 120 feet offshore, and will be about 20 feet deep. It will discharge untreated CSOs on the average of once a year.

**Elliott West Pipelines:** Open trench construction will be used to install two new pipelines - one to transfer flows from the collection system to the tunnel, and the other to discharge the treated CSO flows to the new outfall.

Following completion of CSO construction, a public plaza featuring a seating area, art, and landscaping will be built near the transition structure at the outfall site. Construction of the plaza is anticipated to occur in early 2004.

### *What it means...*

Work in Myrtle Edwards Park will begin in spring 2001 when the outfall contractor installs signage and modifies the park irrigation system. Bike and pedestrian access will be maintained throughout construction. However, the pedestrian pathway will be converted to allow dual use by pedestrians and bikes from the park's south entrance to north of the Denny Regulator. The bike path will be closed and converted for use as a temporary construction vehicle route for the outfall contractor. Directional signs and flaggers will be used as appropriate to direct park visitors and construction traffic. All construction will be buttoned up tightly between June 28 and July 9 to accommodate crowds for Ivar's Fourth of July Fireworks.



The TBM will start its work from the west portal, now under construction at 545 Elliott Avenue West. At the front of the machine is a cutting head, which will break up the ground in front of the TBM and send the spoils through the machine to an auger. The spoils will then be loaded into rail cars, and hauled out to the tunnel portal. From the working pit, trucks will take the spoils away to an approved disposal site. As the machine advances, the tunnel lining will be put in place behind the cutting head. A laser guidance

system will be in place on the TBM to ensure that the tunnel is constructed in its intended location.

The east portal, now under construction at 8th Avenue North and Roy Street, will be the completion point of the tunnel. When the TBM approaches the portal, an opening will be prepared so that the TBM can enter the portal. The machine will then be disassembled and removed from the portal. It will take about 6-8 months for the TBM to travel from Elliott Avenue West to the east portal.

## Archaeology and the CSO Project

Underground construction presents an opportunity to locate archaeological deposits that might otherwise never be found. During project planning, archaeologists from Larson Anthropological and Archaeological Services Limited (LAAS) worked with the project team to identify the areas where such resources might be found during project construction. Special procedures have been incorporated into the construction documents so that excavation in these areas can be closely observed by the LAAS team. In addition, project procedures were developed in conjunction with other involved agencies so that, if archaeological resources were uncovered during construction, the appropriate agencies would be notified.

Archaeologists recommended construction monitoring in areas that had a potential for buried, intact archaeological deposits. Four places within the project area have a high probability for archaeological deposits: the former Elliott Bay shoreline and tidflats west of Elliott Avenue West; the former shoreline and south margin of Lake Union; a stream and ravine south of Republican Street; and a former prairie northeast of Seattle Center.

Investigation of the west portal site at 545 Elliott Avenue West showed the kinds of changes that have occurred along the Seattle shoreline through time. Recent research has determined that an earthquake about 1,100 years ago changed the shoreline radically. Some areas that had previously been beaches were shifted down by 10-15 feet, and landslides occurred along the shoreline bluffs. As a result of these findings, and other site-specific research regarding the area, the archaeologists determined that observations would



*Land fill situated at the south end of Lake Union, west of Westlake Avenue. (Photo dated October 28, 1915. Courtesy of Seattle Municipal Archives Photograph Collection.)*

be needed as excavation proceeded from today's ground surface down to a level about 20 feet below today's sea level. This would allow the archaeologists to see if any materials were uncovered that told about the previous docks, warehouses, or businesses that had been located on the site, as well as any materials remaining from the native American use of the shoreline area. Archaeologists hoped to find evidence of sites with shell, animal bone, and fire modified rock that would have been on the old shoreline of Elliott Bay.

LAAS archaeologists trained in construction excavation procedures and construction safety monitored excavations over the past few months for the west portal, and two 96-inch shafts west of the railroad tracks. Old pilings and scrap lumber from an old planing mill were the only materials that

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## Archaeology and the CSO Project *(continued from page 5)*

archaeologists identified during the excavation. However, the construction excavation monitoring provided important stratigraphic information on the fill history, marsh, and old beach that archaeologists can apply to other areas along the Seattle waterfront.

In the future, LAAS archaeologists will monitor construction excavation in project areas at the south end of Lake Union. On early historic maps, the south Lake Union shoreline was more than two blocks south of its present position near Valley Street. The contemporary city blocks extending north from Harrison Street were filled with a variety of materials, including sawdust, spoil from regrading operations, refuse from city households, and demolition

debris. Historians know there were a variety of settlements and land uses in South Lake Union between the post-Civil War years and the Roaring '20's. Evidence has been found that Indian homes and camps, Asian neighborhoods, early working-class neighborhoods, sawmills, and other manufacturing ventures were all located in the area. However, they would like more knowledge about the relationship between the groups as the community evolved. In monitoring the CSO excavation sites, archaeologists are hoping to find deposits that help to shed light on their unanswered questions about Seattle's early history.

### Who can I contact with... Questions? Comments? A problem with construction?

#### Community Liaison

Kate Boris-Brown  
Norton-Arnold & Janeway  
206/269-0229

#### Internet Address:

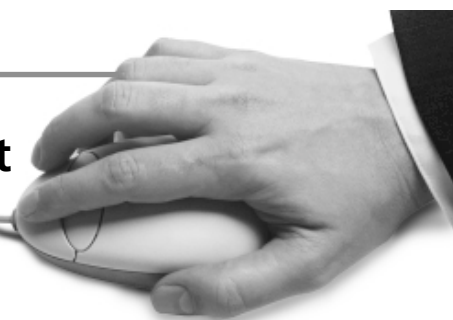
<http://dnr.metrokc.gov/wtd/dennyway/>

#### E-mail: [kate@na-j.com](mailto:kate@na-j.com)

#### Hotline number: 206/205-1460.

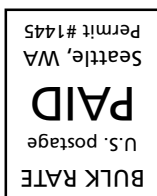
*Use this number to report complaints  
24 hours a day.*

### Curious about tunneling progress?



*The Denny Way CSO web site will include a graphic depicting the tunnel boring machine location, updated each week, beginning in May 2001 when the tunneling gets underway.*

King County's Wastewater Treatment Division has a number of projects and programs underway that may be of interest to you—from habitat conservation and restoration to site selection for a third wastewater treatment facility. If you are curious about these projects and would like more information, please contact Denise Chanez at (206) 296-8286, or check out the King County DNR website at: <http://dnr.metrokc.gov/wtd/>.



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